

ABSTRACT

Delivering heat from modern high temperature solar collectors to hot water storage tanks is more effectively done using a self pressurized, automatic air eliminating, higher temperature fluid loops ~~using non-flammable and low toxicity heat transfer fluids~~ and is the subject of this patent. A pressurizing valve, an overflow reservoir and a vacuum relief valve are used. Non-toxic water/antifreeze mixtures can be used in are pressurized (14#, (up to about 14 Pounds Square Inch pressure above two atmospheres)) systems up to resulting in a 265 ° -degrees Fahrenheit before the mixture boilsboiling point. Loss of circulation under full sun results in solar collector Boiling-boiling under pressure transports either steam or heat out of the closed system. A steam heat pipe is set up between the solar collector and the pressurized liquid-to-outside-air-radiator. The steam generated in the solar collector is must be condensed in the liquid-to-air-radiator and returned to the closed loop systemsolar collector to keep it completely full of fluid and steam. In order to accomplish this in a practical manner a pressurizing cap and overflow reservoir are used. The system will either shed excess heat collected by boiling or limit the heat input from the collector panel by increasing its heat loss due to increasing solar collector temperature above ambientA set of pressure activated air dampers on the solar collector can also be used to shed the excess solar collector heat.